

## WHAT IS CLAIMED IS:

1. A balloon catheter for intracorporeal therapeutic or diagnostic procedures, comprising:

a. an elongated catheter shaft having a proximal catheter shaft section, a distal catheter shaft section, proximal and distal ends, a balloon on the distal catheter shaft section with an inflation chamber, a working section and proximal and distal balloon shaft sections, an inflation lumen extending within the catheter shaft to a location proximal to the distal end of the catheter and in fluid communication with the balloon inflation chamber, a guidewire receiving lumen extending along at least a portion of the distal shaft section to a port at the distal end of the catheter shaft;

b. a distal tip member on the distal catheter shaft section which has proximal and distal end, which is secured by its proximal end to a distal end of the portion of the catheter shaft extending through the inflation chamber and having at least part of the guidewire lumen and which has an inner lumen in fluid communication with the guidewire receiving lumen;

c. a flexible sleeve disposed about the distal shaft section and secured at least to the proximal end of the distal tip member.

2. The catheter of Claim 1 wherein a portion of the catheter shaft extends distally beyond the distal balloon shaft section.



11. The catheter of Claim 1 wherein the distal tip member is about 1.5 to about 2.5 mm in length.

12. The catheter of Claim 1 wherein the flexible sleeve is about 1 to about 10 mm in length.

13. The catheter of Claim 1 wherein the flexible sleeve is about 1 to about 5 mm in length.

14. The catheter of Claim 1 wherein the flexible sleeve is about 1.5 to about 2.5 mm in length.

15. The catheter of claim 1 wherein the catheter shaft has an outer tubular member and an inner tubular member which is disposed within at least a portion of the outer tubular member and which defines at least in part the inflation lumen between the inner and outer tubular members.

16. The catheter of claim 15 wherein the inner tubular member defines at least in part the guidewire receiving lumen.

17. The catheter of claim 15 wherein the inner tubular member extends through the inflation chamber of the balloon.

18. The catheter of claim 17 wherein the inner tubular member extends beyond the distal balloon shaft section.

19. The catheter of Claim 1 wherein the distal balloon shaft section is sealingly secured to the portion of the catheter shaft extending through the

inflation chamber of the balloon.

20. The catheter of claim 19 wherein the distal balloon shaft section is sealing secured to the catheter shaft by heat or fusion bonding.

21. The catheter of claim 19 wherein the distal balloon shaft section is sealing secured to the catheter shaft by adhesive bonding.

22. The catheter of Claim 1 wherein the proximal balloon shaft section is sealingly secured to an exterior portion of the catheter shaft.

23. The catheter of claim 22 wherein the proximal balloon shaft section is sealing secured to the exterior of the catheter shaft by adhesive.

24. The catheter of claim 22 wherein the proximal balloon shaft section is sealing secured to the exterior of the catheter shaft by heat or fusion bonding.

25. The catheter of claim 1 wherein the sleeve disposed about the catheter shaft is tapered.

26. The balloon catheter of claim 25 wherein the sleeve is tapered in the distal direction to smaller transverse dimensions.

27. The catheter of claim 1 wherein the sleeve is formed of material which is compatible with material of which the distal tip member is formed.

28. The catheter of claim 1 wherein the sleeve is formed of a polymeric material selected from the group consisting of polyether block amide and polyurethane.

29. The catheter of claim 1 wherein the sleeve is formed of a polymeric material having a Shore hardness between about 80A and 90D.

30. The catheter of claim 1 wherein the sleeve is formed of a polymeric material having a Shore hardness between about 40D and 65D.

31. The catheter of claim 1 wherein the sleeve has an inner lumen with a diameter about the same as the outer diameter of the distal tip member.

32. The catheter of claim 1 wherein the distal tip member is formed of a polymeric material having a Shore hardness between about 80A and 90D.

33. The catheter of claim 32 wherein the distal tip member is formed of a polymeric material selected from the group consisting of polyether block amide and polyurethane.

34. The catheter of claim 1 wherein the distal tip member is formed of a polymeric material having a Shore hardness between about 40D and 65D.

35. The catheter of claim 1 wherein the distal tip member has an inner lumen with a diameter about the same as the guidewire lumen.